Code No. 2069

FACULTY OF ENGINEERING

B.E. 4/4 (EE/Inst./ECE) I-Semester (Main) Examination, November / December 2012

Subject : VLSI Design
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Draw the inverter circuit using BiCOMOS logic. (3)
2. Define one unit delay in CMOS circuits. (2)
3. Give the relation between β_n and β_p in a CMOS circuit. (2)
4. Draw the circuit diagram a 1 bit shift register cell. (3)
5. Explain how CAD tools are used for simulation and synthesis. (3)
6. What is chemical vapor deposition? (2)
7. Realize the Boolean expression using CMOS logic f= $\overline{xy+(x+z)+xz}$. (3)
8. Explain how packaging and testing of ICs are performed. (2)
9. Explain the applications of a current mirror. (2)
10. Draw the circuit of differential amplifier with current mirror load. (3)

PART – B (5x10=50 Marks)

11.(a) What is sheet resistance? (3)
(b) Calculate the resistance of a transistor structure with channel length L= 8λ and width = 2λ. (7)

12.(a) Derive the expression for rise time and fall time of a CMOS inverter response. (5)
(b) Design NOR based RS flip flop using CMOS logic. Explain its operation. (5)

13.(a) Design 4x1 mux using switch logic. Draw the circuit and stick diagram. (5)
(b) Explain the operation of 3T DRAM cell. (5)

14.(a) Draw the flow chart of VLSI chip design hierarchy and explain. (5)
(b) What is the difference between diffusion and ion implantation techniques? (5)

15.(a) Derive the expression for the output current in a BJT current mirror. (4)
(b) Drive the expression for the voltage gain of a common source amplifier using current mirror level. (6)

16.(a) Explain the operation of D-flip flop using transmission cycle switches with a neat circuit diagram. (5)
(b) Realize ALU using adder circuit. (5)

17. Write short notes on : (10)
(a) Bonding, meteralization, etching
(b) Emitter area in BJTs
(c) Layout of input NAND gate

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Code No. 2071

FACULTY OF ENGINEERING

B.E. 4/4 (EE&E) I-Semester (Main) Examination, November / December 2012

Subject : Power Quality
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What is the purpose of power quality data base and how to process PQ data? (3)
2. What are the causes of voltage sag and voltage sag magnitude? (3)
3. What is a ASD system? Explain briefly. (2)
4. What are different types of Sags? (2)
5. What do you mean by phase angle jump for a unbalanced voltage sag? (2)
6. Explain the importance of power quality study. (2)
7. What is the need for PQ data base and how to collection, process, monitor, creation of the Database? (3)
8. How do harmonics effect the capacitor banks? (3)
9. How is PQ monitoring done in a power system site? (2)
10. What is the effect of voltage sags on synchronous motors? (3)

PART – B (5x10=50 Marks)

11. What are the PQ problems? List out and explain in detail. Causes, sources, effects and mitigation techniques. (10)

12. (a) What are the sources of voltage sags?
    (b) What are the causes of voltage sags?
    (c) Draw the flow chart for analysis of voltage sag.

13. (a) With a neat sketch explain the operation of ajudstable speed DC drive?
    (b) Give the technical barriers in ASD's. (10)

14. (a) Explain the effects of harmonics on
    (i) Capacitor banks (ii) Transformer (iii) Motors
    (b) With a neat sketch explain the operation of Adjustable speed AC drive. (10)

15. Design philosophy of filters to reduce harmonics distortion. (10)

16. Write a short notes on : (10)
    (a) Voltage tolerance curves
    (b) Causes of voltage swells

17. (a) Explain the method of evaluation of harmonics in a distribution system.
    (b) How do harmonics effect the capacitor banks? (10)

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Code No. 2067

FACULTY OF ENGINEERING

B.E. 4/4 (EE&E) I-Semester (Main) Examination, November / December 2012

Subject : HVDC Transmission
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. List out the applications of HVDC transmission system. (2)
2. Explain bipolar DC link with neat diagram. (3)
3. Draw the equivalent circuit of rectifier. (2)
4. What is meant by commutation failure? (3)
5. Define pulse number. (2)
6. What are the desired features of HVDC control system? (3)
7. What is meant by characteristic harmonics and non-characteristic harmonics? (3)
8. What is Arc back? (2)
9. Explain how power reversal is done in MTDC system. (2)
10. List out the applications of MTDC systems. (3)

PART – B (5x10=50 Marks)

11.(a) What are the merits and demerits of DC transmission over AC transmission? (5)
(b) Draw the schematic diagram of a typical HVDC converter station and explain. (5)

12.(a) Give the analysis of three phase bridge rectifier with overlap. (5)
(b) From fundamentals obtain equivalent circuit of inverter. (5)

13.(a) Explain the combined control characteristics of rectifier and inverter. (5)
(b) Explain the operation of HVDC circuit breaker with pre-charged capacitor. (5)

14.(a) Write short notes on bypass valves and DC reactors. (5)
(b) Explain the constant control method. (5)

15.(a) Describe the causes of over voltages and protection against them. (5)
(b) Explain the factors affecting the sizing and location of DC reactors. (5)

16.(a) Explain the variable which characterize DC breaker. (5)
(b) Explain about the filters used to eliminate harmonics. (5)

17.(a) Explain the types of MTDC systems, comparing their salient features. (5)
(b) Explain the control methodologies of MTDC systems. (5)

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Code No. 2068

FACULTY OF ENGINEERING

B.E. 4/4 (EE&E) I-Semester (Main) Examination, November / December 2012

Subject : Transducers
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Define
   (a) Threshold (b) Hysteresis (3)
2. Define a first order system. Give an example. (3)
3. What is the basic difference between BONDED and Un-BONDED strain gauges? (3)
4. Why platinum is the widely used metal for RTD's ? Justify. (3)
5. What is the difference between LVDT and RVDT? (3)
6. What is passive transduction? (2)
7. A strain guage has resistance of 120 Ω unstrained and guage factor of 1.2. What is the resistance valve if the strain is 2%? (2)
8. Define transfer function and sinusoidal transfer function. (2)
9. Write any two properties of piezoelectric crystals. (2)
10. What is Peltier effect? (2)

PART – B (5x10=50 Marks)

11. Describe how fibre optic sensors can be used for (10)
    (a) Measurement of sound level
    (b) Measurement of Liquid level

12. Explain the different principles of working of capacitive transducers. (10)

13. Describe the temperature measurement using. (10)
    (a) Thermistors (b) Thermocouples

14. Explain the principle of Piezoelectric Transducers. Derive the relation between O/P voltage and applied force. (10)

15. Explain the construction of wire wound strain guage and derive the expression for guage factor. (10)

16. Briefly explain about: (10)
    (a) Inductive transducer
    (b) Digital transducers

17. Explain the terms: (10)
    (a) Span (b) Gross errors
    (c) Zero order system (d) Principle of Eddy current sensors
    (e) Inverse transducers

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Code No. 2070

FACULTY OF ENGINEERING

B.E. 4/4 (E&EE/Inst.) I-Semester (Main) Examination, November / December 2012

Subject : Principles and Applications of Embedded Systems (Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Define micro controller based systems. (2)
2. Write the addressing method in MOVX instruction. Give an example. (3)
3. Write the functions of counters. (2)
4. List all the call instructions with its functions. (3)
5. Differentiate between interrupts and call-functions. (2)
6. Distinguish between tasks and task states. (2)
7. Write the functions of CAN bus. (3)
8. List various signals used in RTOS. (3)
9. What are the serial protocols used in embedded systems? (2)
10. Calculate the basic DAC specifications for a 12-bit DAC with output range OV to 5V. (3)

PART – B (5x10=50 Marks)

11. (a) Describe the skills required for an embedded system designer. (5)
    (b) Draw the block diagram with functional units of embedded system. Explain. (5)

12. (a) Write and explain the arithmetic instructions in 8051 micro controller. (5)
    (b) Write the usage of Register banks in 8051 micro controller and also explain about bit addressibility. (5)

13. (a) Write a program to display the text "Embedded system" through serial port. (5)
    (b) Illustrate the procedure to handle interrupts using polling mechanisms. (5)

14. (a) Explain the terms effective release times and deadlines of RTOs. (5)
    (b) Evaluate the preemptive priority scheduling mechanism with example. (5)

15. (a) Describe the procedure to design an automatic chocolate vending machine. (5)
    (b) What are methods implemented to achieve instruction level parallelism in ARM architecture? (5)

16. (a) Differentiate between Harvard and Von New Mann architecture. (5)
    (b) What are mail boxes? Explain. (5)

17. Write short notes on: (10)
    (a) I^2 bus
    (b) Message Queues

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Code No. 2032

FACULTY OF ENGINEERING

B.E. 4/4 (Common to All) I-Semester (Main) Examination, November / December 2012

Subject : Entrepreneurship
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Define entrepreneurship. (2)
2. What are the salient features of small scale industries? (3)
3. Differentiate between manager and an entrepreneur. (2)
4. Explain briefly about first generation entrepreneurs. (2)
5. What are the various sources of project financing in India? (2)
6. List out various factors to be considered in choosing the right technology. (2)
7. Define a project and mention different parameters to be considered in project formulation. (3)
8. Discuss about significant features of marketing analysis. (3)
9. What is behaviour? And explain the role of motivation in behaviour of an entrepreneur. (3)
10. Define personality and list out its various attributes. (3)

PART – B (5x10=50 Marks)

11. (a) List out various opportunities and challenges of entrepreneurs in Indian context. (5)
    (b) Explain the role of entrepreneurs in developing the economical status of a country. (5)

12. (a) Explain in detail about women entrepreneurs by highlighting the favourable conditions for them in Indian context. (5)
    (b) Define an Idea and elaborate various methods used for Idea generation. (5)

13. What is project formulation? Explain in detail about marketing, financial and technical analysis in project formulation. (10)

14. Discuss in detail about the concept and salient features of PERT and CPM techniques and explain their role in helping an entrepreneur in successful completion of a project. (10)

15. (a) What is leadership? How any entrepreneur develops leadership qualities required to be successful in his profession? (5)
    (b) Explain in detail about Time management matrix. (5)

16. (a) Discuss about the concept of assessment of text burden and how it will be helpful to an entrepreneur in planning and managing finance effectively. (5)
    (b) "Entrepreneurs are made not born". Give your views with proper justification. (5)

17. Write short notes on any three of the following : (10)
    (a) Partnership firm
    (b) Large scale industries
    (c) Human aspects in project management
    (d) Change behaviour

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